

Poster

Regulation of longevity by drugs and mutants that affect steroid hormones in *C. elegans*.



AntonioJavier Sánchez Díaz, Manuel Muñoz Ruiz

Centro Andalúz de Biología del Desarrollo, Universidad Pablo de Olavide-Consejo Superior de Investigaciones Científicas, Junta de Andalucía, Seville, Spain.

Keywords: Longevity; Steroid hormones; *C. elegans*.

ABSTRACT

Motivation: The molecular pathway and mechanisms by which the aging process is regulated are conserved in many species. In our laboratory has been shown that in *C. elegans*, the loss of SUL-2 function, a sulphatase of steroid hormones, produces an increase in longevity in this nematode. This loss of function can be obtained by mutation or by treatment with compound X. In this mutant the percentage of sulfated hormones steroid increases. we do not know if the effect on longevity is due to a increase in sulphated hormones or a reduction in non-sulfated hormones. In addition to the effect on longevity, the mutation in sul-2, on a mutant background of the insulin receptor, avoid the development of newly hatched nematodes (L1). In this project we want to check if the increase in longevity in a sul-2 mutant background is due to the decrease of steroids hormones without sulfation. To test this hypothesis, we use compounds that inhibit the enzymes involved in the synthesis of steroid hormones and we will study their effect. This work also looks for new mutants affected in the route of steroid hormones and study their longevity.

Methods: We have tested four drugs that inhibit the synthesis of steroid hormones. The essays haven been carried out on a mutant background of insulin receptor daf-2 (e1370). The tested compounds are added in similar concentrations, by 10 or 100 times to those that would be given to a person, with a negative control of DMSO (vehicle) and with a positive control with compound X on strain daf-2. We place an average of 8 *C. elegans* per dish and incubated it at 25° C. After two days, the hermaphrodites are removed and incubated at 25°C. After five days, we counted the proportion of Dauer resistance stage and L1 of the F1.

Results: The results show that all the compounds tested raise the proportion of L1. AJ2 and AJ3 drugs have shown greater activity than the others, although they do not reach 100% of L1 observed in a sul-2 mutant background or with the compound X. These compounds with higher activity will be tested on *C. elegans* strain of Alzheimer to check its mobility.

Conclusions: The result obtain demonstrate that the treatment that inhibits the synthesis of steroid hormones seems to partially mimic the arrest in L1 of the daf-2 mutant strain observed in the presence of compound X.

REFERENCES

- Pérez-Jiménez M. Regulación de la longevidad por la sufatasa sul-2 en *Caenorhabditis elegans*. Tesis doctoral 2012.
Jimébez Guzmán S. Papel de la sulfotransferasa SSU1- en la longevidad de *Caenorhabditis elegans*. Proyecto Fin de Máster 2016.